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EXAMINER	
RAHMAN, FAHMIDA	

ART UNIT	PAPER NUMBER
2116	

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/629,207	LEE ET AL.	
	Examiner	Art Unit	
	Fahmida Rahman	2116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/12/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-28 are pending.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 2/12/2004 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because it does not the signature of first and third inventors.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8, 10-11, 14-17, 21-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Mills et al (US Patent 6795450).

For claim 1, Mills et al teach the following limitations:

A method for optimizing power consumption (line 47 of column 10) **in a communication system** (lines 44-50 of column 10; Fig 1) **comprising a network interface and a host computer** (lines 39-41 of column 11 mention that the invention is applicable for network nodes. Lines 45-60 of column 11 mention that the network device is used to refer to a computer linked to a network via network interface card), **the method comprising:**

- **determining, by the network interface, at least one power mode of the host computer from a plurality of possible power modes** (lines 45-50 of column 10 mention that the network nodes may be "idle" or have entered "sleep" or "suspended" mode, when communication between a node and a hub is limited. Lines 60-65 of column 9 mention that the network may have full power operation mode for supporting full high bandwidth communication. Thus, the network interface can determine a power mode among a plurality of possible modes, such as "full power/operational" or "low power/WOL", based on amount of communication);
- **and selecting, by the network interface, at least one network interface power management state from a plurality of possible power management states based on the at least one power mode determined** (lines 47-49 of

column 13 and lines 54-56 of column 13 mention that the network interface NIC can be ACPI/WOL capable in some cases. Thus, the power management scheme of NIC may adopt ACPI or WOL. Lines 50-53 of column 8 mention the four power states of ACPI. Thus, the NIC may select one of D0-D3 power management states of ACPI for power consumption for plurality of power modes, such as, "idle", "fully operational" or "WOL" based on amount of communication, as described in lines 44-50 of column 10).

For claim 2, lines 61-66 of column 9 mention that the network can have full power and low power operation mode. Lines 20-21 of column 10 mention that the network nodes may be LS, sleep, WOL or suspend. Additionally, an ACPI compliant system supports power management state D0, where the LAN is fully operational with high power mode, D3 cold, where the system is fully powered down with all functional units are non-operational, D3 hot or WOL state, where some parts are powered to wake up on demand. The power modes of the system can be "fully operational" or "full power", "fully powered down", "WOL".

For claim 3, the system supports the link suspend mode, which requires even less power than standard idle mode. Lines 57-63 of column 17 mention that the LS mode is applicable to any low power mode, such as D1, D2, WOL. Thus, the WOL mode can be divided into two modes: WOL with LS mode or WOL without LS mode. In LS mode, the invention maintains a link without causing it to reset, while cycling transmitter power on

and off (lines 5-10 of column 10). The four power modes are "fully powered", "fully powered down", "WOL with LS", "WOL without LS".

For claims 4 and 5, lines 54-56 of column 13 and lines 29-35 of mention that the system improves implementation of a PC's ACPI implementation. Since, ACPI supports D0-D3 power management states, the ACPI compatible PCs in LAN can provide four power management states: fully operational D0, in between power management states D1-D2, Wake On LAN D3 hot, "fully powered down" in D3 cold. This invention also provides two types of idle state: standard Idle or Link Suspend Idle as shown in Fig 3.

For claim 6, lines 60-65 of column 9 mention that the invention provides "full power mode" for supporting full communication and low power mode when limited communication is occurring. Lines 45-50 of column 10 mention that power can be saved by switching from full power protocol to low power protocol. Thus, determining at least one power mode comprises determining at least one power management mode.

For claim 7, lines 60-65 of column 9 mention that the power mode is based on amount of communication.

For claim 8, lines 60-65 of column 9 mention that the full power mode supports full high bandwidth communication. Lines 23-26 of column 4 mention that the speed of the link is set up by auto-negotiation to set up the operation mode of the communications link.

Thus, the communication device operates at a frequency supporting high bandwidth transmission.

For claim 10, lines 10-15 of column 5 mention that the 100BASE-TX will reconfigure it to lower 10BASE-T. Thus, the throughput is reduced when a high capacity PHY is connected to a low capacity PHY.

For claim 11, lines 10-15 of column 5 mention that the 100BASE-TX will reconfigure it to lower 10BASE-T. The highest common operational mode is chosen. Thus, the throughput is reduced when a high capacity PHY is connected to a low capacity PHY. Since, the invention is applicable to 1000BASE-T, the throughput would be reduced to 1000BASE-T to 10BASE-T when 1000BASE-T would be connected to 10Base-T.

For claim 14, Mills et al teach the following limitations:

A method for optimizing power consumption (line 47 of column 10) **in a communication system** (lines 44-50 of column 10; Fig 1) **used in a Gigabit Ethernet environment** (Lines 18-20 of column 12 mention that the invention is for fast Ethernet. Lines 25-26 of column 12 mention that the concept is expandable to similar other local area network such as 1000BASE-T, which is a Gigabit transmission. Thus, the invention supports Gigabit Ethernet transmission) **comprising**:

- **determining at least one power mode of a host from a plurality of possible host power modes** (lines 45-50 of column 10 mention that the network nodes may be "idle" or have entered "sleep" or "suspended" mode, when

communication between a node and a hub is limited. Lines 60-67 of column 9 mention that the invention provides the network to have full power operation mode for supporting full high bandwidth communication and low power operation when limited communication is occurring. Thus, the network interface can determine whether it is "full power" or "low power" mode, based on amount of communication);

- **and selecting at least one network interface power management state from a plurality of possible power management states based at least in part, on said determined at least one power mode** (lines 47-49 of column 13, lines 29-37 of column 13 and lines 54-56 of column 13 mention that the network interface NIC can be ACPI/WOL capable. Thus, the power management scheme of NIC may adopt ACPI or WOL. Lines 50-53 of column 8 mention the four power states of ACPI. Thus, the NIC may select one of D0-D3 power management states of ACPI for power consumption for plurality of power modes such as "full power" or "low power" based on amount of communication, as described in lines 44-50 of column 10. D0 power management state supports "full power" mode, whereas D1-D3 power management mode supports "low power mode". Besides, this invention provides another low power mode and corresponding power management state called link suspend mode).

For claim 15, lines 61-66 of column 9 mention that the network can have full power and low power operation mode. Lines 20-21 of column 10 mention that the network nodes

may be LS, sleep, WOL or suspend. Additionally, an ACPI compliant system supports power management state D0, where the LAN is fully operational with high power mode, D3 cold, where the system is fully powered down with all functional units are non-operational, D3 hot or WOL state, where some parts are powered to wake up on demand. The power modes of the system can be "fully operational" or "full power", "fully powered down", "WOL".

For claim 16, lines 54-56 of column 13 and lines 29-35 of mention that the system improves implementation of a PC's ACPI implementation. Since, ACPI supports D0-D3 power management states, the ACPI compatible PCs in LAN can provide four power management states: fully operational D0, in between power management states D1-D2, Wake On LAN D3 hot, "fully powered down" in D3 cold. This invention also provides two types of idle state: standard Idle or Link Suspend Idle as shown in Fig 3.

For claim 17, lines 60-65 of column 9 mention that the full power mode supports full high bandwidth communication. Lines 23-26 of column 4 mention that the speed of the link is set up by auto-negotiation to set up the operation mode of the communications link. Thus, the communication device operates at a frequency supporting high bandwidth transmission.

For claim 21, lines 10-15 of column 5 mention that the 100BASE-TX will reconfigure it to lower 10BASE-T. Thus, the throughput is reduced when a high capacity PHY is connected to a low capacity PHY.

For claim 22, line 26 of column 12 mentions that the concept is expandable to 1000BASE-T. In addition, the invention supports WOL, where PCs are put into sleep. Thus, the throughput can be reduced from 1000BASE-T to 0.

For claim 23, Mills teaches the following limitations:

A method for optimizing power consumption (line 47 of column 10) in a communication system (lines 44-50 of column 10; Fig 1) **used in an Gigabit Ethernet environment** (Lines 18-20 of column 12 mention that the invention is for fast Ethernet. Lines 25-26 of column 12 mention that the concept is expandable to similar other local area network such as 1000BASE-T, which is a Gigabit transmission. Thus, the invention supports Gigabit Ethernet transmission) **comprising:**

- **determining** (lines 29-37 of column 13 mention that the embodiment improves implementation of ACPI for LAN capable PCs with Microsoft WOL NIC. Thus, the system can be ACPI compatible) **at least one of a first** ("fully operational" or "full power" as mentioned in lines 62-63 of column 9), **second** ("fully power downed", as lines 29-30 of column 14 mention that the standard PHY can follow up a "reset" or "initial power on", which implies that the system may be powered off) **and third power modes** (various low power modes such WOL, LS);

- **and selecting at least one network interface power management state, based at least in part on said determined power mode** (ACPI compliant system selects D0 management state for "fully powered mode", D3 cold for "fully powered down", D3 hot for "WOL").

For claim 24, Mills teaches the following limitations:

A method for optimizing power consumption (line 47 of column 10) **in a communication system** (lines 44-50 of column 10; Fig 1) **used in an Gigabit Ethernet environment** (Lines 18-20 of column 12 mention that the invention is for fast Ethernet. Lines 25-26 of column 12 mention that the concept is expandable to similar other local area network such as 1000BASE-T, which is a Gigabit transmission. Thus, the invention supports Gigabit Ethernet transmission) **comprising:**

- **determining a host power mode (**full power or low power based on amount of communication, as mentioned in lines 61-66 of column 9**)**
- **and selecting at least one network interface power management state, based at least in part on said determined power mode** (lines 45-50 of column 10).

For claim 25, Mills teaches the following limitations:

A method for optimizing power consumption **(line 47 of column 10)** in a communication system **(lines 44-50 of column 10; Fig 1)** comprising:

- **detecting an amount of traffic of the communication system** (lines 65-67 of column 9);
- **and selecting at least one power management state from a plurality of power management states based at least in part in said detection** (lines 44-58 of column 10).

For claim 26, note lines 44-50 of column 10.

For claim 27, Mills teaches the following limitations:

A system for optimizing power consumption (line 47 of column 10) **in a communication system** (lines 44-50 of column 10; Fig 1) **used in an Gigabit Ethernet environment** (Lines 18-20 of column 12 mention that the invention is for fast Ethernet. Lines 25-26 of column 12 mention that the concept is expandable to similar other local area network such as 1000BASE-T, which is a Gigabit transmission. Thus, the invention supports Gigabit Ethernet transmission) **comprising:**

- **a PHY** (124) **adapted to detect at least one host power mode from a plurality of possible host power modes** (full power or low power based on amount of communication, as mentioned in lines 61-66 of column 9)

- **and select, based the host power mode detected, at least one power management state from a plurality of power management states for operation of the system** (lines 45-50 of column 10).

- **and a MAC interfacing with at least said PHY** (Fig 1).

For claim 28, note line 27, which mention that the PHY can be implemented as a multi-channel device on a chip.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 9 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Mills et al (US Patent 6795450), in view of applicant's admission of prior art.

For claims 9 and 18, Mills et al do not teach that the frequency to be 62.5 MHz.

Applicant mentions that the frequency 62.5 MHz is used to support 1000BASE-T in [39] of page 11. Since, the invention of Mills et al is applicable to 1000BASE-T, the frequency should be 62.5 MHz.

Claims 12, 13, 19 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Mills et al (US Patent 6795450), in view of Yamamoto et al (US Patent 5778237).

For claims 12, 13, 19 and 20, Mills et al do not teach reducing clock for power management.

Yamamoto et al teach that the clock is reduced to 6.25 MHz in a power management state (lines 5-15 of column 1; Fig 9B).

It would have been obvious to one ordinary skill in the art to combine the teachings of Mills et al and Yamamoto et al. One ordinary skill would be motivated to reduce clock speed to 6.25 MHz, since 10BASE-T can support such clock speed. The clock reducing mechanism is widely used in the art for reducing power consumption.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fahmida Rahman whose telephone number is 571-272-8159. The examiner can normally be reached on Monday through Friday 8:30 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Browne can be reached on 571-272-3670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fahmida Rahman
Examiner
Art Unit 2116

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